

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 12, 13, 15, 16, 17, 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todd (6,013,304 in view of Schieberle (XP-002249876) or Berchtold et al. (WO 03/041515).

Todd discloses that it is known to heat *Cruiferae* (*Brassica*) solids to produce flavor, and aroma, which can be used to flavor foods and beverages, which inherently would have produced flavor modifying properties as it can be heated from 130 to 450 F (col. 4, lines 15-40, lines 53-60, col. 7, lines 40-48, col. 28, lines 36-40). The reference differs from claims 1 and 2 in the use of whole seeds, and in the lower limit of the temperature range. *Brassica* seeds are the part of the mustard plant which is processed into a flavorant and condiment. Schieberle (XP-002249876) disclose a process of making treated sesame seeds by roasting whole sesame seeds, which contain 2-furfurylthiol. The reference discloses that roasting of the odorless sesame seeds generates an intense flavor (page 145, paragraphs 1-3). Temperatures of 180 C for 30 minutes can be used as above. Therefore, it would have been obvious to use the seeds of *Brassica* as disclosed by Schieberle, and the higher temperature as shown by Schieberle in the process and product of Todd for the function of producing flavor modifying ingredients such as 2fft since

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Schieberle discloses that 2fft is produced by heating at temperatures of 180 C. for 10 minutes. If fft was developed at this temperature, the same temperature would have been expected to develop the fft in other seeds such as seeds of the Brassica genus.

Claim 1 further requires whole Brassica seeds. However, it would have been within the skill of the ordinary worker to use whole seeds, or whatever part of the seed which produced the desired flavorants. Roasting or heating to a temperature of 180 C whole sesame seeds have been disclosed above by Schieberle to develop fft.

Therefore, it would have been obvious to use whole seeds in the product and process of Todd in order to develop particular flavors.

Schieberle (XP-002249876) disclose a process crushing the seeds on page 147, para. 2. as in claim 3.

An extract and distillate is disclosed as in claims 4 and 5 using a hydrocarbon (page, 148).

The product is disclosed as in claims 4 and 5 and 6 and an extract thereof as in claim 7 (page 148). Therefore, it would have been obvious to process as shown by Schieberle in the process and product of Todd.

A consumable or flavor preparation is seen to have been made as the composition is disclosed as above as in claims 6–8. (Todd col. 7, lines 44-60). The fact that the procedures of the reference are different than that of applicant is not a sufficient reason for allowing the product-by-process claims since the patentability of such claims is based upon the product formed and not the method by which it was produced. See *In re Thorpe* 227 USPQ 964. The

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burden is upon applicant to submit objective evidence to support their position as to the product-by-process claims. See *Ex parte Jungfer* 18 USPQ 2D 1796. Therefore, it would have been obvious to make such products as shown by the combined references of Schieberle and Todd.

2-Furfurythiol (FFT) is disclosed as being made by the process of claim 1 (Schieberle, page 145, 1<sup>st</sup> col.) as in claims 12 and 15. Even though sesame seeds are not from the genus brassica, they are in the same family of Brassicaceae which used to be named Cruciferae). The reference discloses how FFT is extracted and if heating seeds containing FFT develops the FFT, it would have been obvious to extract it from other seeds such as Brassica as shown by Todd, who would inherently develop FFT since the claimed range of temperature is shown by Todd in view of Schieberle. An increase in the concentration of FFT of 100% is seen to have resulted as in claim 13, since before roasting the sesame seeds were odorless, but afterwards an intense flavor was developed (page 145, 1<sup>st</sup> para. ). Nothing has been shown that FFT is not in sesame seeds. Therefore, it would have been obvious to make 2FFT using the process of Todd in view of Schieberle.

The degree of concentration as in claims 16, 17, is seen to have been shown since the process has been shown as above. The product is considered to be a roasted brown material (page 147, 2<sup>nd</sup>. Para, page 148, 1 and 2<sup>nd</sup> col.'s) .

Claims 20 and 21 further requires particular Brassica seeds. However, Todd discloses the use of Brassica alba, which is white mustard.

Berchtold et al. disclose roasting seeds as in claim 1 from various families including cruciferum and brassica by continuously heating seeds to a predetermined temperature (abstract).

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Times and temperatures as in claim 2 of up to 120 C for 10 minutes are disclosed on page 3, lines 14-18. The product is seen to have had a flavor modifying property since it was heated to within the claimed time as in claims 1 and 2 as shown in the specification. It is well known, that foods can be heated for various lengths of time, for longer times as shown by Berchtold et al. i. e. 10 minutes, or shorter times at higher temperatures as shown by the instant application. Nothing has been shown that heating sesame seeds for 10 minutes at the claimed temperatures would not have developed ff-2. As Todd teaches treating cruciferum (brassica) at higher temperatures, it would have been obvious to vary the temperature as shown by Berchtold et al. in the process of Todd.

Reducing the seeds or fragmenting them is disclosed on page 5, lines 15-20 as in claim 3.

Products are disclosed as in claims 6 and 7, as in claim 1 which is a whole or fragmented heat- treat seed as in claims 1-7 of the reference (page 10, lines 1-30).

The product is considered consumable as in claim 8 since that is the purpose of treating the seeds as in claim 8 (page 12, lines 15-20).

Furfurylthiol (2-FFT) is seen to be increased to 100 % as in claims 12, 13, 15 since the process of heating to the claimed temperature has been shown as in claims 1 and 2.

Claim 1 and the other pertinent claims have been amended to require a higher lower temperature of 160 C. However, nothing critical is seen because the specification discloses using temperatures in the range of 120-250 C.(col. 2, lines 1-4). Even though sesame seeds are not Brassica seeds, they contain the same 2-furfurylthiol which is developed on heating, and now Brassica plants containing seeds have been disclosed which can be treated at high temperatures to extract flavors. Since the chemical compound of 2-furfurylthio (2 ff) would be

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the same no matter what type of seed was used, then heating it to temperatures within the claimed amount would develop the 2-ff. Therefore, it would have been obvious to treat other seeds containing 2ff with heat at even higher temperatures in order to develop 2-ff as to further treat as shown by the independent claims.

Claims 1-7, 12, 15, 16, 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todd in view of Vasundhara et al. (XP 009014888).

Todd discloses that it is known to heat Cruciferae (Brassica) solids to produce flavor, and aroma, which can be used to flavor foods and beverages, which inherently would have produced flavor modifying properties as it can be heated from 130 to 450 F (col. 4, lines 15-40, lines 53-60, col. 7, lines 40-48, col. 28, lines 36-40). The reference differs from claims 1 and 2 in the use of seeds and in the lower limit of the temperature range. However, generally the seeds are the part of the mustard plant which is processed into a flavorant and condiment. Vasundhara discloses that the mustard seed (Brassica Juncea Linn) can be roasted which brings about a flavor change as in claim 1, to a temperature of 120 C for about 2 hours (claim 2), and ground as in claim 3 (abstract, page 685, 3<sup>rd</sup>, page 686, para. 1). Claim 1 and the other pertinent claims have been amended to require a higher temperature of 160 C. However, nothing critical is seen because the specification discloses using temperatures in the range of 120-250 C.(col. 2, lines 1-4). Also, Todd discloses treating at the higher temperatures. Brassica seeds, contain the same 2-furfurylthiol which is developed on heating. Since the chemical compound of 2-furfurylthio (2 ff) would be the same no matter what type of seed was used, then heating it to temperatures within the claimed amount would develop the 2ff. Therefore, it would have been obvious to

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treat Brassica seeds containing 2fft as shown by Vasundhara in the process and product of Todd and to heat at even higher temperatures in order to develop 2-fft. as shown by Todd.

An extract is made as in claim 4 from methylene chloride and steam distilled as in claim 5 (page 686, lines 4 and 5).

A roasted powder is made as in claim 6 which is extracted as in claim 7 (page 686, 1<sup>st</sup> para.).

FFT is formed as in claim 12 (page 691 1<sup>st</sup> para.). The product containing FFT is formed as in claim 15 and claim 16.

Brassium juncea is disclosed as in claims 20 and 21.

Therefore, it would have been obvious to treat as disclosed by Vasundharra, as in claims 5, 6, 7, 12, 15, 16, 20, and 21 in the process and product of Todd.

Claims 9-11, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todd in view of Schieberle (XP-002249876) or Berchtold et al. (WO 03/041515) or Vasundhara et al. as applied to claims 1--8, 12, 13, 15, 16, 17, 20, 21 and further in view of Lynn (3,697,290) .

Lynn discloses a non-elastic protein containing product where the protein is from seeds such as sesame seed meal or cotton seed or soybean meal. The composition containing the seeds is heated to from 300 to 350 F (148 C to 176 ) Sesame seeds are known to contain 2-fft as in Schieberle . Seeds as in claims 9 and 10 are used in large amounts and combining the seeds with a flavor imparting amount as in claim 11 is disclosed as the seeds are combined with other food ingredients (See examples). As it is known that the treated seeds are edible, it would have been obvious to use them in particular amounts for their known functions. FFT is seen to have

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been found in the food products of Lynn, since the composition is cooked twice to within the claimed heating range, which develops the FFT (col. 6, lines 30-70). The particular amount of FFT as in claims 16-20 is seen to have been within the skill of the ordinary worker, since it is known that these seeds generate FFT, and in cooking, one uses ingredients according to how they will make a product taste. Therefore, it would have been obvious to use known ingredients which contain FFT for their known function of imparting flavoring and nutrition.

Claims 8-10 have been amended to require that the flavor has been produced by the process of claim 1. The fact that the procedures of the reference are different than that of applicant is not a sufficient reason for allowing the product-by-process claims since the patentability of such claims is based upon the product formed and not the method by which it was produced. See *In re Thorpe* 227 USPQ 964. The burden is upon applicant to submit objective evidence to support their position as to the product-by-process claims. See *Ex parte Jungfer* 18 USPQ 2D 1796. Therefore, no weight is given to the process of claim 1 in claim 9.

### ***ARGUMENTS***

Applicant's arguments filed 04-27-10 have been fully considered but they are not persuasive. Applicants have presented an affidavit by Eva Binggeli, one of the inventors as to the effects of roasting whole Brassica Seeds at from 135-150 C for 6 minutes. The affidavit explains that roasting crushed brassica seeds as is done by Todd et al. produces seeds which are quickly heated, but are burnt on the surface of the crushed pieces. Other references show the use of whole seeds such as Schieberle (page 147, 2<sup>nd</sup> column under "roasting of the sesame seeds). Todd was used in combination with other references which show various temperatures for roasting seeds. Surely, it would have been obvious if 2FFt is found in whole sesame seeds

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when roasted at 180 C for 30 minutes, then one could roast other seeds at the same temperature, and would detect the 2FFT if present especially as Todd discloses the claimed process using Cruiferae seeds except the use of whole Brassica Seeds. .

Applicants argue that Todd does not process the seeds as claimed. However, Schieberle although to a different plant, but same genus does heat whole seeds for the claimed amounts. Surely, it would have been obvious if 2FFt is found in roasted sesame seeds when roasted at 180 C for 30 minutes, then one could roast other seeds at the same temperature, and would detect the 2FFT if present especially as Todd discloses the claimed process using Cruiferae seeds.

Applicants could look to other seeds which have flavoring compounds which produce the FFT, and need only to roast to high temperatures to see if the 2FFT were present because it is known as in Schieberle that FFT is produced at particular times and temperatures in other seeds. Even if the seeds contain other compounds, it doesn't mean that the flavor modifiers at the claimed temperatures.

Applicants argue that sesame seeds are not in the same family as Brassica plants. However, as in Schieberle, if one can roast one kind of seed, then it is obvious to roast seeds in general. For instance, if one knows that V-C is found in oranges, it would have been obvious to look in other fruits for the same vitamin. If one knows that 2-FFT is produced by roasting, then one would roast other seeds and nuts and foods to see if that compound was produced. A claim to 2-FF does don't appear until claim 15—18 inclusive.

Applicants argue that one would not be able to predict the behavior of Brassica seeds based on the behavior of Sesame seeds, and that the biochemistry of sesame seeds is completely



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different than that of Brassica seeds which do not contain glucosides and glucosinolates precursors which lead to the formation of isocyanates. Even so, if one can develop 2-FFT by heating to the claimed temperatures, it would be obvious to try such on other seeds, since this is the temperature at which 2-FFT is developed.

Applicants argue that Berchtold has a maximum temperature of 120 C as on page 4. However, as above, in view of Todd, it would have been obvious to heat the seeds to a higher temperature. Applicants argue that Vasundhara does not remedy the problems with the combined references, but only teaches a distinct taste in the flavor of roasted seeds as the result of heat treatment. Vasundhara discloses that the mustard seed (*Brassica Juncea* Linn) can be roasted which brings about a flavor change as in claim 1, to a temperature of 120 C for about 2 hours (claim 2), and ground as in claim 3 (abstract, page 685, 3<sup>rd</sup>, page 686, para. 1). This is an important teaching that Brassica seeds can be roasted which brings about a flavor change as in claim 1. Applicants have determined particular conditions for making a flavor change, however, a flavor change can be brought about at a lower temperature for a longer time as disclosed by Vasundhara. Nothing has been shown that the reference to Vasundhara does not also make the FF2. Certainly, if seeds were crushed into a powder as argued the temperature could have been lower to produce a flavor change and FF2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen F. Pratt whose telephone number is 571-272-1404. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Keith Hendricks, can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Helen F. Pratt/

Primary Examiner, Art Unit 1781

6-3-10